

Claims

1. A stacked plate heat exchanger for transferring heat between at least a first fluid and a
2 second fluid, the heat exchanger comprising:

a first end plate having at least one fluid connector drawn from and arranged on the
4 first end plate,

the connector having a first cross sectional plane located at a first port of the
6 connector and a second cross sectional plane located at a second port of the connector,
the first and second planes forming an acute angle relative to each other;

8 a second end plate located opposite the first end plate;

at least one intermediate plate sandwiched between the end plates to provide a surface
10 area for transferring heat between the first and second fluids; and

a fluid line attached to the connector at the second port to direct one of the first and
12 second fluids between the connector and a component other than the connector.

2. The stacked plate heat exchanger of claim 1 wherein the fluid line is located at least
2 partially above and extends over the first end plate.

3. The stacked plate heat exchanger of claim 2 wherein the fluid line is arranged roughly
2 parallel to the first end plate.

- 2 4. The stacked plate heat exchanger of claim 2 further comprising an auxiliary support to
secure the fluid line to the first end plate.
- 2 5. The stacked plate heat exchanger of claim 4 wherein said first end plate includes a
deformation having a shape that conforms with at least part of said auxiliary support to
position the auxiliary support on the first end plate.
- 2 6. The stacked plate heat exchanger of claim 4 wherein the auxiliary support is soldered to
the first end plate and the fluid line.
- 2 7. The stacked plate heat exchanger of claim 4 wherein the auxiliary support is formed as an
integral piece of the first end plate.
- 2 8. The stacked plate heat exchanger of claim 1 wherein the acute angle is preferably between
10 and 70 degrees.
- 2 9. The stacked plate heat exchanger of claim 1 wherein the fluid line is received in the
second port of the connector and soldered thereto.

10. The stacked plate heat exchanger of claim 1 wherein the fluid line surrounds the second
2 port of the connector and soldered thereto.

11. The stacked plate heat exchanger of claim 1 further comprising a vent located on the first
2 end plate for venting one of the fluids.

12. The stacked plate heat exchanger of claim 1 further comprising at least one fluid
2 manifold defined by said at least one intermediate plate.

13. The stacked plate heat exchanger of claim 12 wherein the connector is located above and
2 concentric with the at least one fluid manifold.

14. The stacked plate heat exchanger of claim 12 wherein the connector is located above and
2 slightly offset from the at least one fluid manifold.

15. A stacked plate heat exchanger for transferring heat between a first fluid and a second
2 fluid, the heat exchanger comprising:

4 a first end plate having at least one fluid connector drawn from and arranged on the
first end plate,

the connector having a first cross sectional plane located at a first port of the

connector and a second cross sectional plane located at a second port of the connector,
2 the first and second planes forming an acute angle relative to each other;
a second end plate located opposite the first end plate;
4 at least one intermediate plate sandwiched between the end plates to provide a surface
area for transferring heat between the first and second fluid; and
6 a fluid line attached to the connector at the second port located at least partially above
and extending over the first end plate to direct one of the first and second fluids between the
8 connector and a component other than the connector.

16. The stacked plate heat exchanger of claim 15 wherein the fluid line is located at least
2 partially above and extends over the first end plate.

17. The stacked plate heat exchanger of claim 16 wherein the fluid line is arranged roughly
2 parallel to the first end plate.

18. The stacked plate heat exchanger of claim 16 further comprising an auxiliary support to
2 secure the fluid line to the first end plate.

19. The stacked plate heat exchanger of claim 18 wherein said first end plate includes a
2 deformation having a shape that conforms with at least part of said auxiliary support to

position the auxiliary support on the first end plate.

2 20. The stacked plate heat exchanger of claim 18 wherein the auxiliary support is soldered to the first end plate and the fluid line.

2 21. The stacked plate heat exchanger of claim 18 wherein the auxiliary support is formed as an integral piece of the first end plate.

2 22. The stacked plate heat exchanger of claim 15 wherein the acute angle is preferably between 10 and 70 degrees.

2 23. The stacked plate heat exchanger of claim 15 wherein the fluid line is received in the second port of the connector and soldered thereto.

2 24. The stacked plate heat exchanger of claim 15 wherein the fluid line surrounds the second port of the connector and soldered thereto.

2 25. The stacked plate heat exchanger of claim 15 further comprising a vent located on the first end plate for venting one of the fluids.

26. The stacked plate heat exchanger of claim 15 further comprising at least one fluid manifold defined by said at least one intermediate plate.

27. The stacked plate heat exchanger of claim 26 wherein the connector is located above and concentric with the at least one fluid manifold.

28. The stacked plate heat exchanger of claim 26 wherein the connector is located above and slightly offset from the at least one fluid manifold.

29. A stacked plate heat exchanger for transferring heat between at least a first fluid and a second fluid, the heat exchanger comprising:

a first end plate having at least one fluid connector drawn from and arranged on the first end plate,

the connector having a first cross sectional plane located at a first port of the connector and a second cross sectional plane located at a second port of the connector, the first and second planes forming an acute angle relative to each other;

a second end plate located opposite the first end plate;

a stack of intermediate plates sandwiched between the end plates to provide surface areas for transferring heat between the first and second fluids;

a plurality of fluid manifolds in said intermediate plates to direct the first and second

fluids to said surface areas; and

2 a fluid line attached to the connector at the second port to direct one of the first and second fluids between the heat exchanger and a component other than the heat exchanger.

30. The stacked plate heat exchanger of claim 29 wherein the fluid line is located at least
2 partially above and extends over the first end plate.

31. The stacked plate heat exchanger of claim 30 wherein the fluid line is arranged roughly
2 parallel to the first end plate.

32. The stacked plate heat exchanger of claim 30 further comprising an auxiliary support to
2 secure the fluid line to the first end plate.

33. The stacked plate heat exchanger of claim 32 wherein said first end plate includes a
2 deformation having a shape that conforms with at least part of said auxiliary support to position the auxiliary support on the first end plate.

34. The stacked plate heat exchanger of claim 32 wherein the auxiliary support is soldered to
2 the first end plate and the fluid line.

2 35. The stacked plate heat exchanger of claim 32 wherein the auxiliary support is formed as an integral piece of the first end plate.

2 36. The stacked plate heat exchanger of claim 29 wherein the acute angle is preferably between 10 and 70 degrees.

2 37. The stacked plate heat exchanger of claim 29 wherein the fluid line is received in the second port of the connector and soldered thereto.

2 38. The stacked plate heat exchanger of claim 29 wherein the fluid line surrounds the second port of the connector and soldered thereto.

2 39. The stacked plate heat exchanger of claim 29 further comprising a vent located on the first end plate for venting one of the fluids.

2 40. The stacked plate heat exchanger of claim 29 further comprising at least one fluid manifold defined by said stack of intermediate plates.

2 41. The stacked plate heat exchanger of claim 40 wherein the connector is located above and concentric with the at least one fluid manifold.

- 2 42. The stacked plate heat exchanger of claim 40 wherein the connector is located above and slightly offset from the at least one fluid manifold.